The Relationship Between Provider Competence, Content Exposure, and Consumer Outcomes in Illness Management and Recovery Programs

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Abstract

Provider competence may affect the impact of a practice. The current study examined this relationship in sixty-three providers engaging in Illness Management and Recovery with 236 consumers. Improving upon previous research, the present study utilized a psychometrically validated competence measure in the ratings of multiple Illness Management and Recovery sessions from community providers, and mapped outcomes onto the theory underlying the practice. Provider competence was positively associated with illness self-management and adaptive coping. Results also indicated baseline self-management skills and working alliance may affect the relationship between competence and outcomes.

Keywords: Illness Management and Recovery, fidelity, competence, severe mental illness, illness self-management

Introduction

Mental health services research has increasingly focused on the implementation of evidence-based practices (Proctor et al., 2009; Torrey, Lynde, & Gorman, 2005) and on methods to measure implementation (Proctor et al., 2011). One such measure is program fidelity, the degree to which a practice is implemented according to the program model (Mowrer & Jones, 1945). Fidelity can play a critical role in both clinical research and the dissemination of evidence-based practices. Fidelity is a multifaceted construct which is composed of the interrelated subdomains of adherence (inclusion of prescribed elements), differentiation (whether treatments differ along critical dimensions), and provider competence (Perepletchikova, Treat, & Kazdin, 2007).

Competence, defined as "the level of the [provider's] skill and judgment" in administering a manualized treatment (Perepletchikova et al., 2007; p. 829), is an important focus of implementation research for several reasons. Providers must understand the program model elements and have the skills to implement the elements faithfully (Baer et al., 2007; Drake, Bond, & Rapp, 2006; Fixsen, Naoom, Blase, Friedman, & Wallace, 2005). Although provider competence is considered important, the relationship between competence and clinical outcome is not always direct. In a recent meta-analysis, Webb, DeRubeis, and Barber (2010) found no overall association between clinical competence and client outcomes, but did find a positive relationship in studies focused on depression. Moreover, there was substantial variation in effect sizes across studies, suggesting potential moderators of the relationship between competence and outcome.

Several factors have limited drawing firm conclusions from prior competence research. First, competence research is often conducted in university training clinics or controlled clinical trials; in both cases, providers are highly trained, often included because of demonstrated skill, and generally receive supports such as supervision and session feedback (Webb et al., 2010). This restricts the range of competence, thus limiting the examination of its effects on outcomes. To our knowledge, there has been no research examining the relationship between competence and outcomes with a sample of community providers. Second, studies often measure competence and outcomes at the same time, which may conflate

temporal order. Third, competence ratings are often based on ratings of single sessions, which may provide an inadequate estimate of competence. Fourth, studies may rely on competence measures without confirmed psychometric rigor. Finally, fidelity research more broadly has focused on the association between overall model fidelity and consumer outcomes without consideration of theoretical linkage between specific model elements and specific consumer outcomes. In other words, extant analyses typically do not examine whether the provision of certain elements are associated with certain outcomes and whether associations match the theoretical mechanisms of action of the model (however, for an exception, see Henggeler, Melton, Brondino, Scherer, & Hanley, 1997). As noted by Cronbach and Meehl (1955), as stated in Squires et al. (2011), "validity rests in a nomological network that generates testable propositions that relate scores … (as representations of a construct) to other constructs, in order to better understand the nature of the construct being measured" (p. 13). In summary, community-based research is needed that examines the relationship between provider competence and consumer outcomes, as prescribed by the theory underlying the intervention.

Illness Management and Recovery

Illness Management and Recovery (IMR) is an evidence-based approach to teaching consumers how to set and achieve personal recovery goals and to acquire knowledge and skills to manage their illnesses (Mueser et al., 2002; Mueser et al., 2006). The curriculum includes ten module topics taught to participants (individually or in groups) using motivation-based, educational, and cognitive-behavioral strategies. Research has supported IMR as an evidence-based practice, including positive effects on illness self-management and observer-rated symptom reduction (McGuire et al., 2013). IMR was developed within the conceptual framework of the stress vulnerability model of mental illness (Mueser et al., 2006). In the present study, we sought to examine the relationship between the competent provision of particular IMR elements and the outcomes presumably affected by these elements, as indicated by the stress-vulnerability model.

Current Study, Specific Hypotheses and Rationale

The current study examines the relationship between providers' competence in IMR, and its impact on consumer outcomes. Providers engaging in IMR in either a group or individual format were assessed on their level of IMR competence, while consumers attending IMR sessions (group or individual) were assessed for a myriad of outcomes including: coping, goal-related hope and social support. The aim of IMR is improving consumer recovery through better self-management, and IMR program-level fidelity has been associated with greater improvements in self-management (Hasson-Ohayon, Roe, & Kravetz, 2007). We therefore hypothesize *higher overall IMR competence will be associated with increased illness self-management (Hypothesis 1).*

A key task within any mental health intervention is engaging the consumer in services through establishing a strong working alliance. Moreover, a philosophical pillar of IMR is maintaining a recovery orientation, an attitude consistent with "a process of change through which individuals improve their health and wellness, live a self-directed life, and strive to reach their full potential" (SAMHSA, 2012). Maintenance of such a positive environment is thought to not only increase engagement, but to increase hope for recovery. We therefore hypothesize that *higher provider competence in establishing a therapeutic relationship, engaging group members, and recovery orientation will be related to increases in two related outcomes: working alliance and goal-related hope (Hypothesis 2).*

Social support is believed to reduce the impact of stress (Erickson, Beiser, Iacono, Fleming, & Lin, 1989; Veiel, 1985) and social contacts and support are robust predictors of the course of severe mental illness (SMI; Buchanan, 1995; Strauss & Carpenter, 1977). IMR addresses social support through several means, including the regular inclusion of significant others in IMR sessions as well as encouraging mutual support between group members (when IMR is provided in a group format). Moreover, a specific IMR module addresses ways to strengthen one's social support. We therefore hypothesize *higher competence in encouraging mutual support between group members and involvement of significant others as well as more sessions on the building social support module will be associated with increases in social support (Hypothesis 3).*

Coping strategies and relapse prevention training have been associated with improved functioning and decreased relapse and re-hospitalization for persons with severe mental illness (Lam et al., 2000; Mueser et al., 2002; Perry, Tarrier, Morriss, McCarthy, & Limb, 1999; Scott, Garland, & Moorhead, 2001). In IMR, consumers are taught to identify environmental triggers, monitor warning signs, and take immediate steps to prevent full relapses. Family members and/or significant others are often included in developing the consumer's relapse prevention plan. Providers also work on assessing and strengthening coping skills for managing stress and persistent symptoms. We hypothesized that *competence in relapse prevention training and coping skills training, as well as the number of sessions covering modules in the stress-vulnerability model, coping with stress, and coping with problems and persistent symptoms will be associated with increased adaptive coping (e.g. requesting support, engaging in healthy behaviors to stay busy) and decreased maladaptive coping (e.g. using substances, ignoring the situation; Hypothesis 4).*

Methods

Study Setting & Recruitment

Participants (providers and consumers) were recruited from a convenience sample of mental health agencies with on-going IMR services. A description of the study was sent to an e-mail list of all agencies having received IMR training through a State contract as well as other agencies known to the research team to provide IMR services. Each site was also later contacted individually via phone and e-mail. Providers from twenty-one agencies in New Jersey (n = 17), New York (n=1) and Indiana (n = 3) participated, including community mental health agencies (n = 2), psychiatric rehabilitation centers (n = 16), Veteran's Affairs Medical Centers (n=1), and state-operated inpatient units (n=2). Consumers being served by these providers were then targeted for recruitment. In additional to IMR, services as usual were available to consumers, such as case-management, medication management, individual and group programming, and housing and vocational assistance, depending on the site. The total sample included 48 IMR groups serving 236 consumer recipients of IMR services.

Participants

Consumers. The total number of consumers was 236. The mean age for consumers was 45.2 (*SD* = 12.1). Most were male (58.7%) and Caucasian (55.3%), with 32.0% identifying as African American, 0.9% Asian, and 11.8% as other (0.9% as Native American or Pacific Islander, 1.8% as American Indian or Alaska native, 7.3% as more than one race, and 1.8% as unknown). The majority of the consumers were of non-Hispanic ethnicity (75.4%). Few consumers were married (6.8%); the highest level of education was high school for most (64.5%) and few were employed (17.0%) or in school (6.9%). Psychiatric diagnosis was assessed via self-report, with 59 consumers (25.2%) reporting multiple diagnoses and 18 (7.8%) reporting no diagnosis. The most common diagnoses reported included psychotic disorders (n = 100, 43.5%), followed by depression (n = 78, 33.9%), bipolar disorder (n = 56, 24.3%), posttraumatic stress disorder (PTSD; n = 25, 10.9%), other anxiety disorders (n = 12, 5.2%), and other (n = 9, 3.9%).

Providers. The mean age of providers (n=63) was 39.6 (*SD* = 13.4). Most were female (67.7%) and had been working in the mental health field for an average of 7.9 (*SD* = 6.8) years. Providers' highest level of education was high school/GED (12.9%), associate's degree (9.7%), bachelor's degree (33.9%), and master's degree (43.5%). Self-reported disciplines included psychology (29.5%), social work (26.2%), counseling (16.4%), peer support (6.6%), nursing (3.3%), and other 18%. Most had received formal IMR training (74.2%), but few had received IMR-specific supervision (44.9%) or consultation (29.8%). Providers reported doing IMR for a mean of 1.8 (*SD* = 2.5) years, provided IMR to a mean of 44.2 (*SD* = 186.2) consumers, and had completed the full IMR curricula with a mean of 2.6 (*SD* = 8.6) individuals and 1.5 (*SD* = 2.9) groups.

Procedures

All IMR sessions were audio-recorded for three months. To ensure that all modules could be observed in the study time frame, all providers were instructed to cover module 1 on Recovery Strategies, and were then randomly assigned one of four topically organized sets of additional modules. This is in accordance with recommendations for implementing IMR in an open-enrollment group format; module 1 is recommended for all participants first, in order to set personal goals. After the completion of the

assigned modules, providers were instructed to select additional IMR modules consistent with the clinical needs of the consumers to cover for the remainder of the observation period. Research staff met with potential consumer participants in person or via phone prior to their first IMR session, obtained informed consent, and administered baseline surveys. The initial Working Alliance Inventory was administered three weeks later. Follow-up surveys were collected three months after the first IMR session. All outcomes, with the exception of provider competence, were measured through consumer self-report. Provider competence was measured through audio-recorded IMR sessions. Consumers received a gift-card for completing study surveys. Procedures were approved by IRBs at Indiana University and Rutgers University.

Measures

Global illness self-management. The construct was assessed with the client-rated Illness Management and Recovery Scale (IMR Scale; Mueser et al., 2004). The IMR Scale was developed specifically to measure illness self-management outcomes and is based on the stress-vulnerability model (Liberman et al., 1986; Zubin & Spring, 1977). The IMR Scale has 15, Likert scale 5-point items. Psychometric analyses indicate adequate internal consistency, test-retest reliability, and convergent validity (Färdig, Lewander, Fredriksson, & Melin; Hasson-Ohayon, Roe, & Kravetz; Salyers, Godfrey, Mueser, & Labriola, 2007). Internal consistency was good ($\alpha = 0.79$) in our sample.

Working alliance. Working alliance was assessed using the Working Alliance Inventory Short Form (WAI-S) Client Version. The scale has shown to be acceptable with a SMI population (Busseri & Tyler, 2003; Gehrs & Goering, 1994; Horvath & Greenberg, 1989; Tracey & Kokotovic, 1989). The measure has demonstrated good reliability and validity (Horvath & Greenberg, 1989; Tracey & Kokotovic, 1989). We used the 12-item version (Tracey & Kokotovic, 1989), which has also demonstrated reliability and validity (Busseri & Tyler, 2003; Gehrs & Goering, 1994; Tracey & Kokotovic, 1989). In our sample, internal consistency was good ($\alpha = 0.84$).

Social support. This was assessed through the Multidimensional Scale of Perceived Social Support (MSPSS). The MSPSS includes 12, Likert scale items ranging from 1 *("Very Strongly*

Disagree") to 7 *("Very Strongly Agree"*). The test-retest reliability and internal consistency is high (Zimet, Dahlem, Zimet, & Farley, 1988) and the scale's appropriateness and reliability in a population of outpatients with schizophrenia was found to be good (Cecil, Stanley, Carrion, & Swann, 1995). For our sample, the internal consistency was excellent ($\alpha = 0.95$).

Goal-related hope. Goal-related hope was assessed using the 6-item Adult State Hope Scale (Snyder et al., 1996). The items are rated on a 4-point scale from 1 (*"Definitely False"*) to 4 (*"Definitely True"*). A series of studies demonstrated internal consistency, high levels of convergent and discriminant validity, and sensitivity (Snyder et al., 1996). The scale has also been shown to be appropriate for use in individuals with SMI (Dickerson, 2002; McGrew, Johannesen, Griss, Born, & Vogler, 2004). Internal consistency for our sample was good ($\alpha = 0.85$).

Coping skills. Coping skills were assessed using the BRIEF COPE, a 28-item scale. Participants answer Likert scale items ranging from 1 (*I haven't been doing this*) to 4 (*I've been doing this a lot*) to indicate frequency of different coping strategies. The Brief COPE has 14 scales included, which map onto a 2-factor structure of adaptive and maladaptive coping strategies (SAMHSA, 2012). The instrument has been utilized to measure coping in a SMI population, and has shown to have good reliability and internal consistency (Drake et al., 1998; SAMHSA, 2012). In our sample, the internal consistency was good for the adaptive coping subscale ($\alpha = 0.84$), but lower for the maladaptive subscale ($\alpha = 0.66$).

Provider competence. Provider competence in IMR provision was assessed using the IMR Treatment Integrity Scale (IT-IS). The IT-IS is a 16-item, behaviorally anchored scale used to measure competence in IMR provision displayed in a given session (McGuire et al., 2012). Each of the 16 items are rated on a 5-point scale (1 = *Unsatisfactory* to 5 = *Excellent*) , and corresponds to an element of IMR (e.g., Therapeutic Relationship, Recovery Orientation, Cognitive-Behavioral Techniques). Trained raters scored audio-recorded IMR sessions on each item, following a protocol with a scoring rubric and indicators of excellence for each. Three items are scored only when the applicable portion of the IMR curriculum is part of the given session (i.e., Coping Skills Training, Relapse Prevention Planning, and Behavioral Tailoring for Medication) and two items are scored only when IMR is delivered in groups

(engagement of group members and mutual support between group members). A confirmatory factor analysis supported a one-factor model (McGuire et al., 2012). The scale demonstrated excellent inter-rater reliability and criterion validity. For this study, raters scored four sessions from each provider-group or provider-individual unit. At least one session covering each module topic assigned to the provider was randomly selected for rating, after which sessions were randomly selected until four sessions were chosen for rating. In the current study internal consistency was good ($\alpha = .82$; calculated excluding optional items).

Session attendance. Providers kept logs of session dates, participant attendance, and module topic covered during the session. Session topic was confirmed by research staff via audio-recordings.

Analyses

Descriptive statistics were computed for each measure. Due to the nested structure of the data (i.e., consumers nested within providers), a multilevel model (MLM) framework was used for analyses (Snijders & Bosker, 1999) where Level 1 represented the individual (consumer), and Level 2 represented the grouping variable (provider). Applying a MLM framework, for consumer *i* seeing provider *j*, the following equation predicting outcome *y* is appropriate: $y_{ij} = \alpha_j + \beta_j x_{ij} + e_{ij}$. As shown, a consumer's score on a certain outcome is partially due to grouping characteristics (Level 2 variable of provider). This framework presupposes that consumers sampled from one provider are more similar to one another than to consumers seeing another provider. Where appropriate, to test the assumptions for multilevel models, Level 1 and Level 2 residuals were inspected for homogeneity of variance, normality, and linearity (using MIXED_DX macro in SAS 9.3; Bell, Schoeneberger, Morgan, Kromrey, & Ferron, 2010). Additionally, kurtosis, skewness, and outliers were considered for each model. Two observations appeared to exert more influence on parameter estimates and from inspection of box and whisker plots appeared to be outliers. However, results did not change when these outliers were excluded; therefore, these observations were retained for final analyses. Both Level 1 and Level 2 variables were tested as well as their interaction in predicting consumer outcomes. The number of IMR sessions the consumer attended, as well as the interaction between attendance and competence measure (e.g., IT-IS x attendance) were entered as

Level 1 predictors. Unless otherwise noted, neither attendance nor the interaction were significantly associated with the outcome and were thus excluded from the final model. The maximum likelihood method was used for estimating models to compensate for missing data.

Results

Attrition and Aggregate Results

Of the 236 consumers, 53 (22.5%) did not complete follow-up measures. Completion rate was higher for consumers with psychotic diagnoses (85%) than for those without (73%; ($X^2(1)=4.92$, p = 0.03) and higher for consumers receiving substance abuse services at baseline (88%) than those not (75%; $X^2(1)=4.06$, $p = 0.04$). Additionally, compared to study completers, non-completers at baseline had lower illness self-management (3.61 vs. 3.35; t = 2.65, d.f. = 234, p =.01) and goal-related hope (18.75 vs. 17.25, t = 2.15, d.f. = 71, p = .03), and more positive alcohol/drug attitudes (-6.68 vs. -3.56; t = -2.28, d.f. = 109, p = .02). Given these significant differences, all models included psychotic diagnosis (yes vs. no) and receipt of substance abuse services as covariates; baseline scores for the relevant outcome measure were also included in each model. Without accounting for competence, consumers receiving IMR showed little change across all outcome measures; only illness self-management improved from baseline to follow-up (Table 1). The average IMR competence across all sessions was in the "needs improvement" range (mean = 2.7, s.d. = .55).

Overall IMR Competence and Self-Management (Hypothesis 1)

We first examined our hypothesis that greater overall provider IMR competence would be associated with better consumer illness self-management at follow-up, controlling for the effects of illness self-management at baseline and number of sessions attended. As hypothesized, IMR competence was associated significantly with improvement in self-management (Refer to Table 2a). Other predictors in the model (psychotic disorder diagnosis, substance abuse services at baseline, or attendance) were not predictive (see Table 2a). There was a significant interaction between illness self-management at baseline and IMR competence. In order to explore the interaction we created three groups of consumer participants based on baseline self-management scores (<1 standard deviation below, within ± 1 standard deviation of,

and >1 standard deviation above the mean) and conducted separate analyses for each group. Consumers with lower baseline illness self-management who received IMR from providers with higher IMR competence improved more in illness self-management at follow-up than similar consumers who received IMR from less competent providers ($_{\beta}$ = .34, standard error = .16, d.f. = 37, t = 2.09, p = .04); however, the relationship between improvement in illness self-management and provider competence in IMR was not significant for consumers whose baseline illness self-management scores were close to or higher than the mean (See Figure 1a). There was no significant interaction between attendance and IMR competence on change in illness self-management.

Hope and Working Alliance (Hypothesis 2)

We next tested the relationship between three IMR competence items (therapeutic relationship, recovery orientation, and engagement of group members) and working alliance and goal hope, respectively, at follow-up. There were no significant predictors of hope; however, working alliance was predicted by greater therapeutic relationship competence (see Table 2b). Engagement of group members was not a significant predictor; however recovery orientation was significant predictor (see Table 2b). The 2-way interactions between baseline working alliance and therapeutic relationship competence and baseline working alliance and recovery orientation competence on follow-up working alliance were also significant (see Table 2b). In order to explore the interactions, we created three groups of consumers based on baseline working alliance scores (< 1 standard deviation below, within ± 1 standard deviation of, and >1 standard deviation above the mean) and conducted separate analyses for each group. However, none of the subgroup analyses were significant.

Social Support (Hypothesis 3)

Contrary to hypotheses, IMR social support competence items (mutual support and involvement of significant others) as well as the number of sessions of the building social support module attended (social support sessions) were not predictive of follow-up social support; only baseline social support scores predicted social support at follow-up.

Coping (Hypothesis 4)

We examined the relationship between provider competence in relapse prevention training, coping skills training, total number of IMR sessions the consumer attended as well as the number of sessions specifically covering the stress-vulnerability model, coping with stress, and coping with problems and persistent symptoms, respectively; and adaptive and maladaptive coping respectively. No predictor variables were associated with maladaptive coping.

For adaptive coping, more IMR sessions attended was associated with reports of increased adaptive coping (see Table 2c). Additionally, there was a significant interaction between provider competence in relapse prevention training and attendance (See Table 2c; See Figure 1b). In order to explore the interaction we created three groups of consumers based on sessions attended (<1 standard deviation below, within ± 1 standard deviation of, and >1 standard deviation above the mean) and conducted separate analyses for each group. Among those with low attendance, provider relapse prevention competence was not associated with adaptive coping. Among those with an average rate of attendance (around 6 sessions), provider relapse prevention competence had significant positive association with improved adaptive coping (β = .85, standard error = .42, d.f. = 34, t = 2.03, p = .05). Among those with a high level of attendance (about 10 sessions or more), provider relapse prevention competence had a larger effect size in predicting improvements in adaptive coping (β = .2.08, standard error = .75, d.f. = 34, t = 2.77, p = .009).

Exploratory Analyses

There was little shared variance in ratings of working alliance amongst participants served by the same provider (ICC = .02). With one exception, when models were reexamined including baseline working alliance as a predictor, the hypothesized competence predictors were no longer significantly related to outcomes. When controlling for working alliance, overall provider IMR competence no longer predicted change in illness self-management, whereas baseline working alliance was positively associated with change in self-management (β = .10, standard error = .04, d.f. = 117, t = 2.67, p = .009). In models including working alliance, no predictors (including working alliance) were predictive of social support, maladaptive, or adaptive coping.

Discussion

IMR Competence and Illness Self-Management

The main hypothesis of this study, that higher overall IMR competence would be associated with increased illness self-management, was supported. While most of the prior research has been mixed (Webb et al., 2010), our findings are in line with studies of depression in which provider competence has been associated with better consumer outcomes (Mowrer & Jones, 1945; Trepka, Rees, Shapiro, Hardy, & Barkham, 2004). Moreover, to our knowledge, this is the first study to examine the relationship between provider competence and outcomes for people with severe mental illness. Several important aspects of our study may account for the observed relationship. This study is the first to examine the relationship between competence and outcomes in a community sample. The providers participating in this study were not selected based on expertise or knowledge of IMR. Accordingly, providers demonstrated a wide range of competency, thereby providing substantial variation in the predictor variable. An additional explanation is that the relationship between provider competence and consumer illness self-management was moderated by the consumers' preexisting illness self-management skills. Such relationships, if unaccounted for in prior research, could have obscured findings. Finally, the current study measured competence by rating multiple sessions using a measure with established reliability; both factors increase the confidence that provider competence has been accurately assessed. Considering the current findings in concert with prior research indicating that higher program-level fidelity was associated with consumers outcomes (Hasson-Ohayon et al., 2007), there is now very promising evidence that fidelity—at the program and provider competence level-- is key to achieving success in IMR.

Working Alliance

The study partially supported the hypothesis that some aspects of provider competence, namely establishing a therapeutic relationship and recovery orientation, are related to increases in working alliance. This is an important findings as working alliance is a key therapeutic variable that has been shown to be related to clinical outcomes (Horvath & Symonds, 1991). Recovery orientation involves establishing shared goals for treatment; therefore, it is conceptually linked with working alliance.

Competence was generally not related to outcomes when early working alliance was included in the statistical models. Several explanations exist. Although it would seem reasonable that the same provider skills that lead to higher competence would results in better working alliance, in general, there was little relationship between competence and working alliance and little relationship in working alliance ratings amongst participants served by the same provider. It appears more likely that consumer-reported working alliance captures a unique construct that strongly affects treatment responsiveness. Moreover, because working alliance and the outcomes in the current study are both self-reported, the variance accounted for by methodology may have overshadowed any relationship between self-reported outcomes and objectively rated provider competence. Future research should take a more nuanced approach to testing the relationship which accounts for the methodological variance.

Engaging group members was not associated with outcomes. In contrast to provider competence in therapeutic relationship and recovery orientation, engaging group members is a group process rather than a dyadic process. Therefore, it may be affected by many variables outside of the provider's competence and may not affect working alliance as directly. No provider competence area was associated with consumer goal-related hope. Goal-related hope may have shown less association with provider competence, as it is a more distal outcome with many intervening steps between provider interventions and changes in consumers' attitudes.

Coping

The hypothesis that competence in relapse prevention and coping skills training, as well as the number of sessions covering related modules would be associated with increased adaptive and decreased maladaptive coping was partially supported. Overall attendance (but not attendance at specific sessions) directly predicted improvements in adaptive coping and moderated the relationship between relapse prevention training competence and adaptive coping, such that relapse prevention training competence was associated with greater increases in adaptive coping amongst consumers with more attendance. These findings indicate the effect of IMR on coping is not a direct effect of specific, coping-related content, but rather a cumulative effect of IMR. This may be in part due to the structure of IMR. Although the topic of

coping is explicitly addressed in certain topical modules, improved coping with mental illness is an implicit focus of overall IMR program, and coping may be enhanced by processes supporting a sense of mastery that are interwoven throughout all sessions (e.g., goal-setting and homework, building social support, learning about one's illness, etc; Burns & Spangler, 2000).

The finding that provider competence in relapse prevention training was associated with increased adaptive coping in consumers with average or above average attendance should be interpreted with caution. This relationship was not hypothesized *a priori* and should be viewed as exploratory. Moreover, competence in relapse prevention training is only rated when the provider attempts the technique and therefore very few providers received ratings. Additionally, all providers received ratings of either two or three out of five. Therefore, the relationship demonstrated in the current study is limited to only providers attempting to provide relapse prevention training and distinguishes between those providing it poorly and those providing it adequately. Nonetheless, relapse prevention training has been shown to be an effective intervention (Herz et al., 2000; Mueser et al., 2002) and is a key component of other intervention packages (Copeland, 2002; Starnino et al., 2010). Should the relationship between provider competence in relapse prevention training and coping be confirmed in future research, it would have important implications for IMR, as well as related interventions.

No hypothesized variable was associated with decreased maladaptive coping. The primary focus and mechanism of action of IMR may be increasing adaptive skills such as utilizing social support, recognizing early warning signs, communication with one's providers, and stress-reduction techniques. Moreover, it is a basic learning theory tenet that acquisition of new behaviors is accomplished more quickly than extinguishing previously learned well-established (high habit strength) behaviors (Mowrer & Jones, 1945). Finally, IMR is premised on consumer choice; providers may have a preference for promoting healthy coping as opposed to sending the signal that something the consumer is doing is "wrong."

Regarding social supports, the one study examining the effects of IMR on social support found no effects (Hasson-Ohayon et al., 2007). Evidence-based interventions which have shown positive effects on

social skills (Mueser, Foy, & Carter, 1986; Pilling et al., 2002) include a full curriculum focused exclusively on this issue, whereas IMR includes only one module on the topic, usually covered in 2-3 sessions. Therefore, the "dose" of social skills included in IMR may be inadequate to affect this outcome.

Limitations

Several limitations of the current study should be acknowledged. As with all previous examinations of fidelity (generally) and competence (more specifically), the relationship with outcomes was correlational. It would be impossible to randomly assign levels of practitioner competence. Nonetheless, in contrast to some studies, the present study examined competence prior to outcomes, and analyses accounted for baseline levels, thereby providing evidence for temporal precedence. Another limitation is our sample was geographically limited to three states and cannot be considered representative of the total population of IMR providers and consumers. Furthermore, the relatively brief observation period (3 months) may have limited consumer change. Additionally, although statistically significant, the interaction between illness self-management at baseline and IMR competence is small and consistent with regression to the mean. Future research should aim to replicate and expand upon these findings. Finally, as was the case in previous reports of IMR, other services received by consumers was reported only in general. Therefore, analyses do not control for the effects of services received by the specific consumer—a potentially impactful variable which should be explored in future studies.

Summary and Future Directions

In summary, this study has important implications for the implementation of evidence-based, psychosocial interventions for severe mental illness. First, it is not enough to simply provide IMR—in order to realize greater improvements in consumer outcomes, IMR must be provided in a clinically responsive manner consistent with the program model (i.e., with high competence). Although emerging evidence exists for strategies that encourage implementation broadly, additional research is needed regarding what strategies support fidelity or competence more specifically. Second, additional research is necessary regarding the differential effects of competency on consumers. Our findings indicate that competence may be particularly important for consumers with low baseline self-management. In general,

attendance was associated with outcomes or the effects of competence, except for increasing adaptive coping. Finally, our study extends previous work in demonstrating the importance of competence not only in the context of well-controlled research studies, but in community settings in which most services are provided.

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Table 1: Consumer Measures Baseline and Follow Up Means, SDs and Change Scores

Measure	**N Baseline**	**Baseline *M***	**Baseline SD**	**N Follow Up**	**Follow Up *M***	**Follow Up SD**	***M* Change**	***M* Change SD**
Goal-Related Hope	181	18.8	3.7	181	19.1	3.6	0.4	3.4
Illness Self-Management [a]	183	3.6	0.6	183	3.7	0.5	0.1	0.6
Social Support	183	5.0	1.7	183	5.2	1.5	0.2	1.5
Working Alliance	158	5.7	1.0	158	5.6	1.0	-0.1	1.0
Adaptive Coping	183	5.7	1.4	183	5.7	1.3	0.0	1.2
Maladaptive Coping	183	4.4	1.2	183	4.5	1.1	0.0	1.0

Note. [a] $t = 2.78$, $df = 182$, $p = .006$

Table 2a-c: Hierarchical Linear Models for Illness Management and Recovery Competence and Self-Management, Hope and Working Alliance, and Coping and Attendance

Variable	**β (SE)**	**df**	**t**	***p***
2a. Illness Self-Management Model Controlling for Baseline Illness Self-Management & Attendance				
Psychotic Disorder Diagnosis	-0.10(0.07)	25	-1.44	0.16
Baseline Substance Use Services	0.06(0.08)	17	0.68	0.51
Baseline IMRS Score	1.51(0.46)	139	3.29	0.001
Clinician IMR Competence	1.56(0.63)	37	2.49	0.02
Baseline IMRS Score x Clinician IMR Competence	-0.42(0.17)	139	-2.46	0.02
2b. Working Alliance Model				
Psychotic Disorder Diagnosis	-0.17(0.14)	23	-1.24	0.23
Baseline Substance Use Services	-0.13(0.16)	14	-0.81	0.43
Baseline Working Alliance	0.79(0.45)	116	1.77	0.08
Clinician Therapeutic Relationship Competence	2.22(0.98)	33	2.25	0.03
Clinician Recovery Orientation Competence	-2.14(1.04)	33	-2.05	0.05
Baseline Working Alliance x Clinician Therapeutic Relationship Competence	-0.40(0.17)	116	-2.32	0.02
Baseline Working Alliance x Clinician Recovery Orientation Competence	0.38(0.18)	116	2.12	0.04
2c. Adaptive Coping Model				
Psychotic Disorder Diagnosis	0.26(0.30)	34	0.88	0.39
Baseline Substance Use Services	0.07(0.35)	34	0.19	0.85
Baseline Adaptive Coping	0.54(0.11)	34	5.12	<.0001
Attendance	-0.65(0.30)	34	-2.13	0.04
Clinician Relapse Prevention Competence	-1.05(0.74)	34	-1.43	0.16

Attendance x Clinician Relapse Prevention Competence	0.31(0.12)	34	2.48	0.02

Note. IMR=Illness Management and Recovery; IMRS = Illness Management and Recovery Scale. *= significant at p< .05

Figure 1A. Interaction Effects of IMR Scale Baseline Scores and Overall Provider Competence

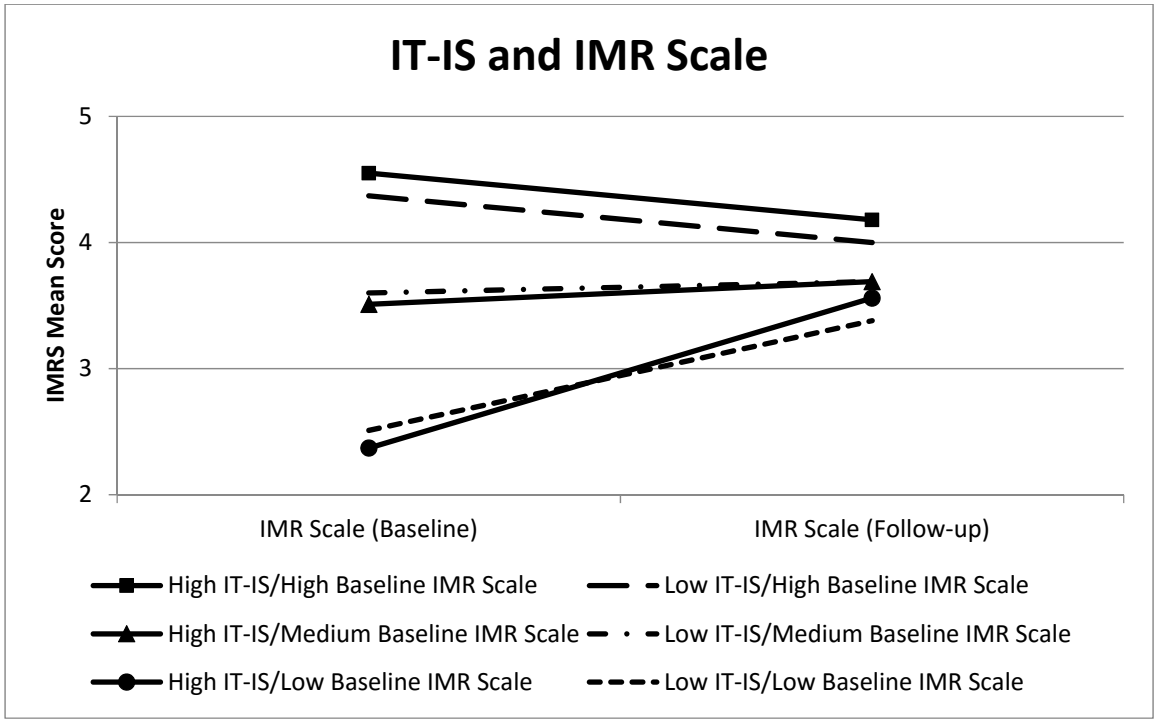
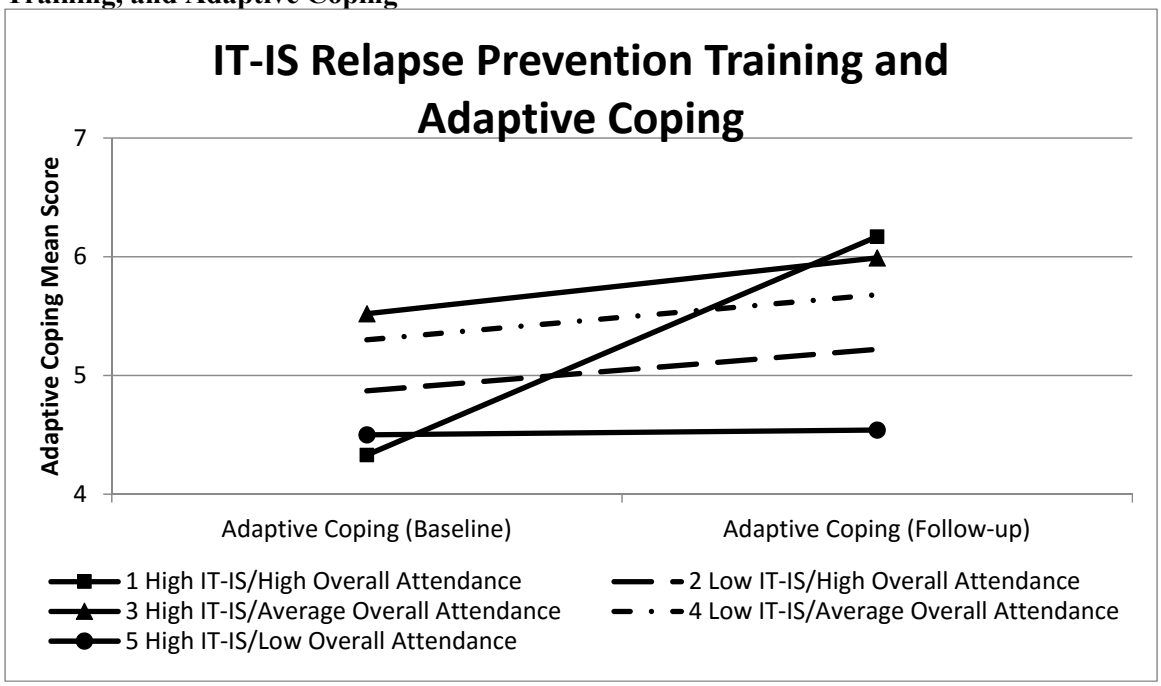


Figure 1B. Interaction Effects of Session Attendance, Provider Competence in Relapse Prevetion Training, and Adaptive Coping



Notes: IT-IS=Illness management and recovery Treatment Integrity Scale, the measure of provider competence in providing Illness management and recovery; IMR Scale= Illness Management and Recovery Scale, the measure of client outcomes for Illness management and recovery.